

# CBCS SCHEME

18CV35



## Third Semester B.E. Degree Examination, July/August 2022 Basic Surveying

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Enumerate the applications of surveying in civil engineering. (06 Marks)  
 b. Discuss the classification of surveying. (08 Marks)  
 c. The distance between two points A and B measured along slope is 504 m. Find the horizontal distance between A and B when,  
 (i) The angle of slope is  $12^\circ$   
 (ii) The slope is 1 in 4.5  
 (iii) The difference in Elevation of A and B is 65 m (06 Marks)

**OR**

- 2 a. What is field book? List the points to be kept in mind while entering in field book. (08 Marks)  
 b. A rectangular plot measures  $20\text{cm} \times 30\text{cm}$  on a village map drawn to a scale of  $1\text{ cm} = 100\text{ m}$ . Calculate area in hectares. If it is redrawn on topo sheet to scale of  $1\text{ km} = 1\text{ cm}$ . What will be its area? Determine representative fraction in both the cases. (06 Marks)  
 c. A survey line BAC crosses a river, A and C being on the near and distant banks respectively. A 50 m perpendicular line to AB is measured from "A". Bearing of "C" and "B" are  $320^\circ$  and  $230^\circ$  respectively. AB being 25 m. Find the width of the river. (06 Marks)

### Module-2

- 3 a. Differentiate between :  
 (i) True meridian and magnetic meridian. (ii) WCB and QB  
 (iii) Fore bearing and back bearing. (06 Marks)  
 b. Compute the bearings for setting out regular pentagon, if the bearing of line AB is  $30^\circ 0'$ . (06 Marks)  
 c. The following bearing were observed in running a closed traverse. Determine the correct magnetic bearings of the lines. (08 Marks)

Line	FB	BB
AB	$38^\circ 30'$	$219^\circ 15'$
BC	$100^\circ 45'$	$278^\circ 30'$
CD	$25^\circ 45'$	$207^\circ 30'$
DE	$325^\circ 15'$	$145^\circ 15'$
EA	$190^\circ 30'$	$10^\circ 15'$

**OR**

- 4 a. Explain the following :  
 (i) Latitude and Departure (ii) Dependent and Independent co-ordinates (06 Marks)  
 b. What is closing error? Explain Bowditch's method of adjusting the traverse. (06 Marks)  
 c. Adjust the following traverse using transit rule: (08 Marks)

Line	AB	BC	CD	DE	EA
Latitude	62.96	67.60	-143.67	-104.97	118.57
Departure	63.33	209.10	47.05	-119.55	-199.70

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg.  $42+8 = 50$ , will be treated as malpractice.

**Module-3**

- 5 a. Write a short note on Auto level. (05 Marks)  
 b. Define the following terms:  
 (i) Reduced level. (ii) Turning point (iii) MSL  
 (iv) Back sight (v) H.I. (05 Marks)  
 c. The following staff readings were observed successively with a level, the instrument having been moved after third, sixth and eighth readings. Enter readings and calculate RL of points by H.I method, if first reading was taken with a staff held on BM = 432.384 m.  
 2.228 m, 1.606, 0.988, 2.090, 2.864, 1.262, 0.602, 1.982, 1.044, 2.684 m (10 Marks)

**OR**

- 6 a. Explain differential leveling with a neat sketch. (06 Marks)  
 b. Write a note on curvature and refraction correction. (06 Marks)  
 c. Following details were recorded in level work. Calculate (i) True R.L of point "B"  
 (ii) Angular error in collimation (iii) Combined correction for curvature and refraction.  
 If distance between A and B is 1000 m. (08 Marks)

Instrument at	Staff reading on		Remarks
	A	B	
A	1.625	2.545	R.L.A = 100.80 m
B	0.725	1.405	

**Module-4**

- 7 a. What are the advantages and disadvantages of plane table surveying? (06 Marks)  
 b. Describe briefly radiation method and intersection method of plane tabling. (10 Marks)  
 c. Write short notes on orientation of plane table. (04 Marks)

**OR**

- 8 a. Explain the graphical method of solution of two point problem with sketches. (08 Marks)  
 b. Describe the different forms of errors in plane table. (06 Marks)  
 c. Briefly explain the working operation of plane table surveying. (06 Marks)

**Module-5**

- 9 a. Define contour. List any six characteristics of a contour with sketches. (08 Marks)  
 b. Discuss the different methods of determining area. (04 Marks)  
 c. A series of offsets were taken from a chain line to a curved boundary line at 10 m intervals in the following order: 3.25, 5.60, 4.20, 6.65, 8.75, 6.20, 3.25, 4.20, 5.65  
 Calculate the area by,  
 (i) Average ordinate rule. (ii) Trapezoidal rule  
 (iii) Simpson's rule (08 Marks)

**OR**

- 10 a. A road embankment is 30 m wide at the top with side slopes of 2 : 1. The ground levels at 100 m intervals along a line AB are as under:  
 A170.30, 169.10, 168.50, 168.10, 166.50B.  
 The formation level at "A" is 178.70 m, with uniform falling gradient of 1 in 50 from A to B. Determine the volume of earth work by prismoidal rule. Assume the ground to be in cross section. (08 Marks)  
 b. Explain Interpolation of contours. List the methods of contouring. (06 Marks)  
 c. Write short notes on Digital planimeter. (06 Marks)

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